

Docket Number
70404.110/ok

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kentaro RYUH et al.	Art Unit: 2629
Application No.: 10/598,029	
Confirmation No.: 9354	Examiner: S. Moon
Filed: August 16, 2006	
Title: DISPLAY DEVICE AND AUTOMOBILE HAVING THE SAME	

APPEAL BRIEF UNDER 35 U.S.C. § 134(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal pursuant to 35 U.S.C. § 134(a) from the rejection of claims 1 and 3-10 as made in the Final Office Action dated January 21, 2010, as further argued in the Advisory Action dated May 27, 2010, and as affirmed in the Notice of Panel Decision from Pre-Appeal Brief Review dated September 15, 2010.

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REAL PARTY IN INTEREST:

The real party of interest is the assignee, Sharp Kabushiki Kaisha, 22-22, Nagaike-cho,
Abeno-ku, Osaka-shi, Osaka 545-8522, Japan.

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RELATED APPEALS AND INTERFERENCES:

Appellant, assignee, and the undersigned attorney or agent of record are not aware of any prior or pending appeals, judicial proceedings or interferences which may be related to, directly affect or be directly affected by or having a bearing on the Board's decision in the pending Appeal.

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STATUS OF CLAIMS:

Claim 2 has been canceled.

Claims 1 and 3-10 are pending.

Claims 1 and 3-10 are rejected over prior art, have been at least twice rejected, and are
the subject of this appeal.

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STATUS OF AMENDMENTS:

On April 20, 2010, Appellant filed an After-Final Amendment in response to the Final Office Action dated January 21, 2010 to amend claim 1 to remedy the alleged indefiniteness of claim 1 in a manner similar to the manner suggested by the Examiner in the Final Office Action mailed on January 21, 2010. In the Advisory Action mailed on May 27, 2010, the Examiner indicated that the After-Final Amendment had been entered. The claims in the Claims Appendix include the amendment made in the After-Final Amendment.

SUMMARY OF CLAIMED SUBJECT MATTER:

Appellant has provided a concise explanation of the subject matter of independent claim 1 below, with specific references to the reference characters, the paragraph numbers, and the figure numbers of U.S. Application No. 10/598,029 in brackets. Appellant notes, however, that this specific explanation is only by way of example and is not intended to limit Applicant's claimed invention to the specific preferred embodiments described in the specification.

Claim 1

A display device [reference characters 100, 100A, 100B, shown in Figs. 1, 3, and 4] comprising a display panel [reference character 10, shown in Fig. 1], and driving circuitry for driving the display panel [reference character 20, shown in Fig. 1], wherein,

the display panel includes a first display section [reference character 10a, shown in Figs. 1, 3, and 4] and a second display section [reference character 10b, shown in Figs. 1, 3, and 4];

the first display section includes a plurality of first scanning lines [reference character 2a, shown in Fig. 1], a plurality of first signal lines [reference character 4a, shown in Fig. 1], a plurality of first switching elements [reference character 6a, shown in Fig. 1] each connected to one of the plurality of first scanning lines and one of the plurality of first signal lines [as shown in Fig. 1], and a plurality of first pixels [discussed in paragraph [0031] of the specification] each connected to one of the plurality of first switching elements [discussed in paragraph [0031] of the specification];

the second display section includes a plurality of second scanning lines [reference character 2b, shown in Fig. 1], a plurality of second signal lines [reference character 4b, shown in Fig. 1], a plurality of second switching elements [reference character 6b, shown in Fig. 1] each connected to one of the plurality of second scanning lines and one of the plurality of second

signal lines [as shown in Fig. 1], and a plurality of second pixels [discussed in paragraph [0031] of the specification] each connected to one of the plurality of second switching elements [discussed in paragraph [0031] of the specification]; and

the driving circuitry includes a first scanning line driving circuit [reference character 22a, shown in Fig. 1] for supplying a first scanning signal to the plurality of first scanning lines, a first signal line driving circuit [reference character 24a, shown in Fig. 1] for supplying a first data signal to the plurality of first signal lines, a second scanning line driving circuit [reference character 22b, shown in Fig. 1] for supplying a second scanning signal to the plurality of second scanning lines, and a second signal line driving circuit [reference character 24b, shown in Fig. 1] for supplying a second data signal for the plurality of second signal lines, the driving circuitry being capable of driving the first display section with a first vertical scanning frequency and driving the second display section with a second vertical scanning frequency which is different from the first vertical scanning frequency [discussed in paragraphs [0032], [0035], and [0036] of the specification], both the first and second vertical scanning frequencies used to display still images on the first and second display sections are lower than both the first and second vertical scanning frequencies used to display moving images on the first and second display sections [discussed in paragraphs [0041], [0042], [0045], and [0046] of the specification].

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GROUND OF REJECTION TO BE REVIEWED ON APPEAL:

The Examiner's rejections of claims 1 and 3 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi (JP 2001-117533) in view of Wakita (U.S. 2002/0154077), claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi and Wakita in view of Baba (U.S. 2002/0003522), claims 6-8 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi and Wakita in view of Kwon (U.S. 6,360,149), and claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi and Wakita in view of Morita (U.S. 7,154,488).

Appellant notes that because the Examiner did not discuss in the Advisory Action dated May 27, 2010 the rejection of claims 1 and 3-10 under 35 U.S.C. § 112, second paragraph, previously made in the Final Office Action dated January 21, 2010, Appellant assumes that the Examiner has withdrawn this rejection in view of the amendment to claim 1 made in the After Final Amendment filed with the USPTO on April 20, 2010, which amendment to claim 1 was indicated as being entered by the Examiner in the Advisory Action dated May 27, 2010.

ARGUMENT:

Appellant has grouped claims 1 and 3-10 together so that claims 3-10 stand or fall with independent claim 1.

Below, Appellant has only specifically argued that independent claim 1 has been improperly rejected. However, dependent claims 3-10 have also been improperly rejected for at least the same reasons that independent claim 1 has been improperly rejected.

Appellant's claim 1 recites:

A display device comprising a display panel and driving circuitry for driving the display panel, wherein,

the display panel includes a first display section and a second display section;

the first display section includes a plurality of first scanning lines, a plurality of first signal lines, a plurality of first switching elements each connected to one of the plurality of first scanning lines and one of the plurality of first signal lines, and a plurality of first pixels each connected to one of the plurality of first switching elements;

the second display section includes a plurality of second scanning lines, a plurality of second signal lines, a plurality of second switching elements each connected to one of the plurality of second scanning lines and one of the plurality of second signal lines, and a plurality of second pixels each connected to one of the plurality of second switching elements; and

the driving circuitry includes a first scanning line driving circuit for supplying a first scanning signal to the plurality of first scanning lines, a first signal line driving circuit for supplying a first data signal to the plurality of first signal lines, a second scanning line driving circuit for supplying a second scanning signal to the plurality of second scanning lines, and a second signal line driving circuit for supplying a second data signal for the plurality of second signal lines, the driving circuitry being capable of driving the first display section with a first vertical scanning frequency and driving the second display section with a second vertical scanning frequency which is different from the first vertical scanning frequency, **both the first and second vertical scanning frequencies used to display still images on the first and second display sections are lower than both the first and second vertical scanning frequencies used to display moving images on the first and second display sections.** (emphasis added)

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Claim 1 is improperly rejected under 35 U.S.C. § 103(a)
as being unpatentable over Nobuyoshi (JP 2001-117533) in view of Wakita

In the Final Office Action dated January 21, 2010, the Examiner alleged that the combination of Nobuyoshi and Wakita teaches the features recited in Appellant's claim 1. More specifically, the Examiner alleged that Nobuyoshi teaches most of the features recited in Appellant's claim 1 except that "Nobuyoshi does not expressly teach the first and second vertical scanning frequencies being first and second frequencies when the first and second display sections are displaying still images and the first and second vertical scanning frequencies being third and fourth frequencies when the first and second display sections are displaying moving images, wherein the first and second frequencies are lower than the third and fourth frequencies." To remedy this deficiency in Nobuyoshi the Examiner relied on Wakita, alleging, "Wakita [claim 13] teaches the concept of driving a display section at a first frequency when the display section displays still images and at a second frequency when the display section displays moving images, wherein the first frequency is lower than the second frequency." Thus, the Examiner concluded, "[I]t would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display device of Nobuyoshi to drive the display sections at first and second frequencies when the display sections display still images and at third and fourth frequencies when the display sections display moving images, wherein the first and second frequencies are lower than the third and fourth frequencies, as taught by Wakita, in order to optimize the power consumption of the display device of Nobuyoshi."

Further, In the Advisory Action dated May 27, 2010, the Examiner stated:

Examiner respectfully submits that nowhere in the Wakita reference discloses that having a normally white pixel (herein after "*NW pixel*") and a normally black pixel (herein after "*NB pixel*") is a requirement for driving a display at two different frequencies. Examiner respectfully requests the Applicants either to

cite the portion of the Wakita reference disclosing such subject matter or to explain how having a NW pixel and a NB pixel is a requirement for driving a display at two different frequencies. A NW pixel is merely a pixel which is white when no voltage is applied to and is black when a full voltage is applied to. A NB pixel is merely a pixel which is black when no voltage is applied to and is white when a full voltage is applied to. Thus, whether a pixel is a NW pixel or a NB pixel is not directly related to a vertical scanning frequency of a display. Accordingly, Examiner respectfully submits that having a NW pixel and a NB pixel is not a requirement for a display to be driven with two different vertical scanning frequencies.”

Appellant respectfully disagrees with the Examiner’s above allegations and submits that one having ordinary skill in the art at the time of Appellant’s invention would not have been motivated to modify Nobuyoshi in view of Wakita in the manner alleged by the Examiner. Instead, one having ordinary skill in the art at the time of the invention would not have had any expectation of success in using the frequency lowering technique of Wakita in the display device of Nobuyoshi because, contrary to the Examiner’s allegations, the frequency lowering technique taught by Wakita will only work on a display that includes both normally white and normally black pixels. As the Examiner is aware, the consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success. Rockwell Int’l Corp. v. United States, 147 F.3d 1358, 47 USPQ 2d 1027, 1033 (Fed. Cir. 1998).

Nobuyoshi teaches a display device with a matrix 107 that includes a left-hand side block 170a and right-hand side block 170b, as shown in Fig. 1 of Nobuyoshi. However, Nobuyoshi merely teaches displaying different video formats (for example, NTSC and computer formats) on the left-hand side block 170a and right-hand side block 170b, as discussed in paragraph [0030] of the English language translation of Nobuyoshi. Nobuyoshi does not teach or suggest altering a vertical scanning frequency of the left-hand side block 170a and right-hand side block 170b of the display device depending on the types of images displayed on the left-hand side block 170a and right-hand side block 170b of Nobuyoshi.

As discussed above, the Examiner admitted that Nobuyoshi clearly fails to teach or suggest the feature of “both the first and second vertical scanning frequencies used to display still images on the first and second display sections are lower than both the first and second vertical scanning frequencies used to display moving images on the first and second display sections” as recited in Appellant’s claim 1.

Wakita teaches a special purpose display device with an unconventional and special type of liquid crystal display that includes adjacent pixels A, B with different structures that are arranged to operate in a different manner, as shown in Fig. 1 and discussed in paragraph [0034] of Wakita. As discussed in paragraphs [0002]-[0006] of Wakita, the object of the special purpose display device is to provide a driving system that can sufficiently reduce flickering even when a driving frequency of the special purpose display device is lowered. In order to achieve this object, Wakita provides:

a display element comprising: a multiplicity of pixels having a light modulating medium and a pixel electrode; and a voltage applying means for sequentially selecting a specific pixel from the multiplicity of pixels and applying a signal voltage thereto in accordance with an image signal; **wherein each of the pixels has a differential coefficient $df(t)/d(t)$ obtained by differentiating the real function $f(t)$ representing the time variation of the output light intensity of the pixel after the signal voltage has been applied thereto, and each of the pixels satisfies a relationship with at least one adjacent pixel thereto such that the differential coefficients $df(t)/d(t)$ have opposite signs.** (see paragraph [0008] of Wakita, emphasis added).

Wakita further goes on to teach a total of 13 embodiments, each and every one of which requires adjacent pixels to be arranged to “have opposite signs” and “have, in the absence of an electric field, display states such that one is in a bright state while the other is in a dark state” and “alternate between light and dark.” As discussed in, for example, paragraphs [0038]-[0041] of Wakita, the above emphasized feature of reduced flickering is only possible because the special purpose display device of Wakita includes both normally white and normally black pixels such that at least half of the screen of the special purpose display device

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of Wakita will be transmitting light at all times no matter what voltage levels are being applied to the pixels. Nowhere in Wakita is there even the slightest hint as to the possibility of successfully achieving the benefits described in Wakita without including both normally white and normally black pixels, nor has the Examiner pointed to any specific portion of Wakita or explained any possible technical reason that would or could explain how the frequency lowering technique of Wakita could possibly work without the essential normally white and normally black pixels of Wakita. Therefore, it is abundantly clear that the frequency lowering technique taught by Wakita is only possible by using a special purpose display device including both normally white and normally black pixels arranged to be directly adjacent to one another and driven in an alternating fashion.

The Examiner alleged that it would have been obvious to “optimize the power consumption of the display device of Nobuyoshi” by using the lowered frequencies of Wakita. However, **the display device of Nobuyoshi uses field emission and plasma display panels, as discussed in paragraphs [0018] and [0036] of Nobuyoshi, and as is well known in the art, both field emission and plasma displays are only capable of generating normally black pixels and cannot be modified to include the normally white pixels required by Wakita.** Accordingly, because the display of Nobuyoshi does not and cannot include both of a normally white pixel and a normally black pixel, and because the normally white pixel and the normally black pixel of Wakita are critical to providing the power consumption and reduced flickering benefits discussed in Wakita, one having ordinary skill in the art at the time of Appellant’s invention would not have been motivated to have modified Nobuyoshi to perform the frequency lowering technique taught by Wakita because the person of ordinary skill in the art would have recognized that such a modification of Nobuyoshi would not be successful and would render the display device of Nobuyoshi inoperative.

As the Examiner is aware, normally white pixels and normally black pixels have substantially different applied voltage requirements and viewing angle characteristics and could

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not be used in systems which switch between different display formats that require different horizontal and vertical frequencies because the hardware requirements for such a system that requires both normally white pixels and normally black pixels would change for each different display format, and thus could not be implemented in Nobuyoshi even if Nobuyoshi taught display panels other than field emission and plasma display panels. Finally, any modification of Nobuyoshi to include normally white pixels and normally black pixels would significantly hinder Nobuyoshi's ability to provide a display that can provide many different types of video formats on separate display areas by switching between different horizontal and vertical frequencies for different formats, which is the goal of the invention of Nobuyoshi.

The Examiner is reminded that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) and MPEP § 2143.01.

Thus, one having ordinary skill in the art at the time of Appellant's invention would not have any reason to combine Nobuyoshi and Wakita as suggested by the Examiner. Instead of basing the conclusion of obviousness on actual teachings or suggestions of the prior art and the knowledge of one of ordinary skill in the art at the time the invention was made, it is clear that the Examiner has improperly used Applicants' own invention as a guide. It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. The Federal Circuit has previously stated that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. In re Fritch, 972 F.2d 1260, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992).

Accordingly, Appellant respectfully requests reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi in view of Wakita.

The Examiner relied upon Baba, Kwon, and Morita to allegedly cure the deficiencies of Nobuyoshi and Wakita. However, Baba, Kwon, and Morita clearly fail to teach or suggest the feature of “both the first and second vertical scanning frequencies used to display still images on the first and second display sections are lower than both the first and second vertical scanning frequencies used to display moving images on the first and second display sections” as recited in Appellant’s claim 1. Additionally, Baba, Kwon, and Morita also fail to provide any reason to combine Nobuyoshi and Wakita in the manner as alleged by the Examiner. Thus, Appellant respectfully submits that Baba, Kwon, and Morita fail to cure the deficiencies of Nobuyoshi and Wakita described above.

Accordingly, Appellant respectfully submits that Nobuyoshi, Wakita, Baba, Kwon, and Morita, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in Applicant’s claim 1.

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Conclusion

Accordingly, Appellant respectfully submits that the rejections of rejections of claims 1 and 3 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi in view of Wakita, claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi in view of Wakita, and further in view of Baba, claims 6-8 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi in view of Wakita, and further in view of Kwon, and claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Nobuyoshi in view of Wakita, and further in view of Morita should be reversed, and that claims 1 and 3-10 are allowable.

Respectfully submitted,

Dated: October 14, 2010

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CLAIMS APPENDIX:

Claim 1 (previously presented): A display device comprising a display panel and driving circuitry for driving the display panel, wherein,

the display panel includes a first display section and a second display section;

the first display section includes a plurality of first scanning lines, a plurality of first signal lines, a plurality of first switching elements each connected to one of the plurality of first scanning lines and one of the plurality of first signal lines, and a plurality of first pixels each connected to one of the plurality of first switching elements;

the second display section includes a plurality of second scanning lines, a plurality of second signal lines, a plurality of second switching elements each connected to one of the plurality of second scanning lines and one of the plurality of second signal lines, and a plurality of second pixels each connected to one of the plurality of second switching elements; and

the driving circuitry includes a first scanning line driving circuit for supplying a first scanning signal to the plurality of first scanning lines, a first signal line driving circuit for supplying a first data signal to the plurality of first signal lines, a second scanning line driving circuit for supplying a second scanning signal to the plurality of second scanning lines, and a second signal line driving circuit for supplying a second data signal for the plurality of second signal lines, the driving circuitry being capable of driving the first display section with a first vertical scanning frequency and driving the second display section with a second vertical scanning frequency which is different from the first vertical scanning frequency, both the first

and second vertical scanning frequencies used to display still images on the first and second display sections are lower than both the first and second vertical scanning frequencies used to display moving images on the first and second display sections.

Claim 2 (canceled).

Claim 3 (previously presented): The display device of claim 1, wherein the display panel is a liquid crystal display panel having a pair of substrates and a liquid crystal layer provided between the pair of substrates.

Claim 4 (original): The display device of claim 3, wherein,
during one vertical scanning period, the first signal line driving circuit supplies a first black display signal to the plurality of first pixels with a different timing from a timing of supplying the first data signal, the first black display signal corresponding to displaying black;
and

for a predetermined first length of time within the length of time corresponding to one vertical scanning period, the plurality of first pixels are placed in a state of retaining the first data signal, and for a predetermined second length of time, the plurality of first pixels are placed in a state of retaining the first black display signal.

Claim 5 (original): The display device of claim 4, wherein,

during one vertical scanning period, the second signal line driving circuit supplies a second black display signal to the plurality of second pixels with a different timing from a timing of supplying the second data signal, the second black display signal corresponding to displaying black; and

for a predetermined third length of time within the length of time corresponding to one vertical scanning period, the plurality of second pixels are placed in a state of retaining the second data signal, and for a predetermined fourth length of time, the plurality of second pixels are placed in a state of retaining the second black display signal.

Claim 6 (previously presented): The display device of claim 1 which is a display device for an instrument panel mounted in an automotive vehicle.

Claim 7 (original): The display device of claim 6, wherein,

the first display section displays at least a velocity of the automotive vehicle and/or a number of revolutions of an engine of the automotive vehicle; and

the first vertical scanning frequency is higher than the second vertical scanning frequency.

Claim 8 (previously presented): The display device of claim 6, wherein the display panel

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includes a touch sensor selectively provided in one of the first display section and the second display section.

Claim 9 (previously presented): The display device of claim 1, wherein at least a portion of the driving circuitry is formed directly on a substrate of the display panel.

Claim 10 (previously presented): An automotive vehicle comprising an instrument panel which includes the display device of claim 6.

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EVIDENCE APPENDIX:

None.

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RELATED PROCEEDINGS APPENDIX:

None.